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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/004,097 | 10/31/2001 | Bogdan Jakobik | 2585-000008 | 9329 |

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| EXAMINER | |
|---|---|
| LEE, DAVID J | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2633 | |

DATE MAILED: 06/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/004,097 | JAKOBIK ET AL. | |
| | Examiner | Art Unit | |
| | David Lee | 2633 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *20 December 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,3-9,11-13,15,17 and 18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *12,13 and 15* is/are allowed.

6)☒ Claim(s) *1,3-9,11,17 and 18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 October 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 17 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Bergano (US Patent No. 6,137,604).

Regarding claim 17, Bergano teaches an architectural arrangement that enables routing of an optical system signal (fig. 3, 303, 305) at different optical layers (fig. 3, layers: Bands 1 to N) of an optical transport network, the optical system signal being constituted in a layered membership relationship that defines at least two optical layers (fig. 3, layers: Bands 1 to N), comprising: at least two optical transport lines residing in the optical transport network (fig. 3, 301, 306); a network switching site interconnecting the optical transport lines, the network switching site having at least one network switch and operable to route optical signals amongst either of the optical transport lines (fig. 5, 503 to 508; and see also col. 5, lines 37-43); and a plurality of signal impairment compensation mechanisms distributed across each of the optical layers of the optical system signal (col. 4, lines 52-57) at locations other than at the network switch, and operable across each of the optical layers of the optical system signal to perform a

signal impairment compensation operation on optical signals therein (fig. 2, 202, $205_1$ to $205_N$; and see also fig. 3, $304_1$ to $304_N$; and col. 4, lines 50-59).

Regarding claim 18, Bergano teaches that the signal impairment compensation operation is at least one of fixed gain flattening, dynamic gain flattening, optical transient suppression, dispersion compensation and polarization mode dispersion. In column 2, lines 16-20, Bergano discloses that the signal impairment compensation operation is dispersion compensation.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3-5, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamoto et al (US Patent No. 6,738,181) in view of Applicant's admitted prior art.

Regarding claim 1, Nakamoto teaches an optical sending apparatus (col. 2, line 45 and fig. 7, 108) being constituted in a layered member relationship that defines at least two optical layers (col. 13, lines 16-18 and fig.4, 121-1 to 121-m). The apparatus comprises: an optical transport line (fig. 7, along 102-1) operable to carry an optical system signal; multiplexing components (fig. 7, 144-1 to 144-8) operable to receive a plurality of optical data signals (fig. 7, 141-1 to 141-15) to form an optical system signal and launch the optical system signal into the optical transport line (fig. 7, 102-1); and a

plurality of signal impairment compensation mechanisms operable across each of the optical layers (fig. 7, 142-1 to 142-15). Nakamoto does not teach that the signal impairment compensation is performed on each signal within each layer, and that the signal impairment compensation operation includes dynamic gain flattening and optical transient suppression. However, it is well known in the art to apply techniques such as optical transient suppression, dynamic gain flattening and dispersion compensation to the optical signals and it is well known in the art to apply dispersion compensation for optical signals at each layer (paragraph 0019). One of ordinary skill in the art would have been motivated to apply optical transient suppression, dynamic gain flattening and dispersion compensation to each layer in order to provide sufficient optical power for long-haul communication and for equalization at each layer. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to apply to apply optical transient suppression, dynamic gain flattening and dispersion compensation on the optical signals at each layer.

Regarding claim 3, Nakamoto teaches a set of multiplexers (fig. 7, 144-1 to 144-8) operable to receive the plurality of optical data signals (fig. 7, 141-1 to 141-15) and combine the plurality of optical data signals to form a plurality of intermediate optical signals, and a system level multiplexer (fig. 7, 144-8) operable to receive the plurality of intermediate optical signals and combine the plurality of intermediate optical signals to form the optical system signal.

Regarding claim 4, Nakamoto teaches that the signal impairment compensation mechanisms are positioned at one or more inputs associated with the set of

multiplexers (fig.7, 142-1 to 142-15), at one or more inputs to the system level multiplexer (fig. 7, 142-6, 142-10), and at an output of the system level multiplexer (col. 16, lines 53-56 and fig. 6, 132). The optical amplifier 132 is a signal impairment compensation mechanism because it compensates for signal loss by amplifying the signal.

Regarding claim 5, Nakamoto teaches a method for transporting optical signals in an optical transport network, comprising: receiving a plurality of optical data signals (fig. 7, 141-1 to 141-15); performing signal impairment compensation on each of the plurality of optical data signals (fig. 7, 142-1,2,4,5,7,9,11,12,14,15, 143-1 to 143-5); selectively combining the plurality of optical data signals to form a plurality of intermediate optical signals (fig. 7, 144-1 to 144-7); combining the plurality of intermediate optical signals to form an optical system signal (fig. 7, 144-8); and launching the optical system signal into the optical transport network (fig. 7, 102-1). Nakamoto does not teach that the signal impairment compensation is performed on each signal within each layer, and that the signal impairment compensation operation includes dynamic gain flattening and optical transient suppression. However, it is well known in the art to apply techniques such as optical transient suppression, dynamic gain flattening and dispersion compensation to the optical signals and it is well known in the art to apply dispersion compensation for optical signals at each layer (paragraph 0019). One of ordinary skill in the art would have been motivated to apply optical transient suppression, dynamic gain flattening and dispersion compensation to each layer in order to provide sufficient optical power for long-haul communication and for

equalization at each layer. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to apply to apply optical transient suppression, dynamic gain flattening and dispersion compensation on the optical signals at each layer.

Regarding claim 11, Nakamoto teaches a step in performing signal impairment compensation on the optical system signal (col. 16, lines 53-56 and fig. 6, 132).

5. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamoto in view of Applicant's admitted prior art and in further view of Milton et al (US. Patent No. 6,631,018 B1).

Regarding claim 6, Nakamoto and Applicant's admitted prior art teach all the limitations as applied to claim 5, except for the step of separating the optical system signal into the plurality of intermediate optical signals at a network switching site associated with the optical transport network, the network switching site interconnecting a plurality of optical transport lines; and routing at least one of the plurality of intermediate optical signals to one of the plurality of optical transport lines. Milton discloses a system where the system signal (fig. 4, 2) is separated into a plurality of intermediate optical signals (fig. 4, 12, 13, 17) at a network switching site associated with the optical transport network (fig. 4, 115), the network switching site interconnecting a plurality of optical transport lines (fig. 4, note transport lines exiting and entering cross-connect switching site); and routing at least one of the plurality of intermediate optical signals to one of the plurality of optical transport lines (fig. 4). One of ordinary skill in

the art would have been motivated to incorporate a network switching site interconnecting a plurality of optical transport lines because a switching site allows for provisioning of lightpaths and the switching of a traffic stream from one line to another line in case one line fails. Therefore, it would have been obvious to an artisan at the time of invention that a network switching site interconnecting a plurality of optical transport lines of Milton be incorporated with the optical transport system of Nakamoto to provide provisioning and protection switching.

Regarding claim 7, Milton discloses that the step of routing at least one of the plurality of intermediate optical signals further comprises using an optical switch (fig. 4, 115 and col. 5 lines 59-60) residing at the network switching site.

Regarding claim 8, Milton discloses the step of routing at least one of the plurality of intermediate optical signals further comprises manually routing the at least one intermediate optical signal without the use of a switch (fig. 4, 13 and col. 5, lines 5-11) to a multiplexer residing at the network switching site.

Regarding claim 9, Milton discloses separating remaining intermediate optical signals into a plurality of remaining optical data signals (fig. 4 – the intermediate optical signals 12 from the demultiplexers 10 are separated into optical data signals 116 after passing through the optical cross-connect 115); routing the plurality of remaining optical data signals to a plurality of optical switches residing at the network switching site (an optical cross connect can have a plurality of optical switches residing at the network switching site).

### *Allowable Subject Matter*

6. Claims 12, 13, and 15 are allowed.

### *Response to Arguments*

7. Applicant's arguments with respect to claims 1, 3-9 and 11 have been considered but are moot in view of the new ground(s) of rejection.

8. Applicant's arguments regarding claims 17 and 18 filed on 12/20/2004 have been fully considered but they are not persuasive.

Regarding claims 17 and 18, Applicant argues that Bergano introduces dispersion compensation at only one layer of an optical signal. Examiner disagrees. As can be seen in fig. 3, Bergano teaches performing dispersion compensation ($304_1$-$304_N$) on each of the layers (Band 1 to Band N). Also, Bergano teaches that it is necessary to perform dispersion compensation on each of the said layers (col. 4, lines 51-54). Applicant also argues that Bergano fails to disclose a network switch that routes optical signals amongst two transport lines and that "the wavelength dependent coupler 503" of Bergano does not route signals amongst two destinations. Examiner disagrees. Please note that "503" is a wavelength routing device (col. 5, line 37), not a wavelength dependent coupler. According to Bergano, in col. 5, lines 37-44, Bergano teaches a network switch that is operable to route signals amongst either of the transport lines. The low band channels and the high band channels are each routed to their given destinations using wavelength router 503.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Lee whose telephone number is (571) 272-2220. The examiner can normally be reached on Monday - Friday, 9:00 am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DL

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